

CORAL ISLANDS OF THE WESTERN INDIAN OCEAN

1. INTRODUCTION

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As part of the programme of research on Aldabra Atoll in the southwest Indian Ocean, which began in August 1967 (Stoddart 1967, 1969a), it has been possible for parties from the Royal Society Expedition to Aldabra to visit other western Indian Ocean coral islands from time to time. These visits, though brief, have been important for two reasons. First, the arguments for the conservation of Aldabra itself for scientific research rested, at least in part, on a comparative analysis of the ecological status of neighbouring islands. Second, much of the available information on these islands is many decades old, and some have never been described. This series of reports aims first, therefore, to record the new information obtained during visits in 1967 and 1968 to seven such islands, and second, to provide succinct summaries and guides to the large but scattered literature, much of it taxonomic in nature, but which contains occasional references to them. In this way it is hoped to provide convenient accounts of these islands for the use of future workers, and also to indicate to visiting scientists at the Aldabra Research Station the possibilities for investigation of particular problems or particular groups elsewhere in the western Indian Ocean. A certain amount of repetition in bibliographical lists, acknowledgements etc., has been unavoidable to maintain the independence of the chapters on the different islands.

The coral islands of the western Indian Ocean (Figure 1) may be taken to comprise the following groups:

- (a) the islands of the Mozambique Channel, including Europa;
- (b) the Aldabra group, including Aldabra, Assumption, Cosmoledo and Astove;

- (c) the Farquhar group, comprising Farquhar, St Pierre and Providence;
- (d) the Amirantes, including (from north to south) African Banks, Remire, D'Arros, St Joseph, Desroches, Poivre, Etoile, Boudeuse, Marie-Louise, and Desnoeufs;
- (e) Bird and Dennis Islands, northern Seychelles Bank;
- (f) Cargados Carajos;
- (g) isolated islands, including Gloriosa, Agalega, Tromelin, Coetivy and Alphonse.

Most early navigators completely neglected the coral islands in the accounts of their travels. Thus Owen, who surveyed Farquhar and other islands in the 1820s, referred to the islands of the Amirantes simply as "low, sandy, sterile, and altogether insignificant" (Owen, 1833, II, 159), and neither he, nor Fairfax Moresby, after whose ships the Menai and Wizard islands on Cosmoledo Atoll are named, nor Wharton, who carried out the first thorough hydrographic survey in the 1870s, pay much attention to island form, vegetation or animal life. The first useful accounts are generally those dated from the period 1890-1910, by Abbott, Dupont and others. Two major expeditions, in H.M.S. Alert in 1882, to the Amirantes and Gloriosa, and by H.M.S. Sealark in 1905, to most of the western Indian Ocean islands, resulted in large collections and many records scattered through a large literature. While the collections in total were large, however, individual islands were often represented by small and inadequate collections. Gardiner (1936, Gardiner and Cooper 1907) contributed brief accounts of many islands to the Reports of the Percy Sladen Trust Expedition, and J. C. F. Fryer (1910) wrote useful accounts of Bird and Dennis Islands in addition to his work on the Aldabra group.

Apart from Vesey-FitzGerald's work in the 1930s, the most important subsequent investigations have been those of Baker (1963) and Piggott (1961, 1968), who visited all of the British-administered islands during a geological and soil survey in 1960, and of Gwynne, Wood and Parker, who collected plants and birds during a cruise in 1967 (Gwynne and Wood 1969). Summaries of the earlier work on Assumption, Astove, Gloriosa, Cosmoledo, Farquhar, St Pierre and Providence were published by Stoddart (1967b).

The present series of studies is based on visits by Royal Society Expedition personnel to Farquhar, Cosmoledo, Astove, Assumption, Desroches, Remire, and African Banks. In addition, there have been excellent recent reports on Europa Island (Legendre 1966) and on Cargados Carajos Shoals (Staub and Guého 1968). Gibson-Hill (1952) summarised data from Agalega, and Brygoo (1955) published observations on Tromelin. These western Indian Ocean studies are linked with others

in the central Indian Ocean, in the southern Maldives (Stoddart 1966) and in the Chagos Archipelago (Stoddart and Taylor, in preparation). These permit some preliminary generalisations on regional variation in Indian Ocean reefs and islands (Stoddart 1969b).

Important gaps remain, however, even at the level of the summary reports presented in this Bulletin. Though large collections of marine and terrestrial fauna were made at Coetivy in 1905, there is no account of this island available. There has been no study in this century of Gloriosa (though Guilcher and others (1965) give aerial photographs), in spite of its probable importance in the colonisation of the Aldabra group from Malagasy. Apart from the three islands discussed here, there is no account of the fauna and flora of the Amirantes, and our knowledge of Agalega is very patchy. Tromelin has been among the least well known of all these islands; the account included here (Staub 1970) follows a visit to the island in 1968 by M. France Staub of Curepipe, Mauritius.

It is, of course, unfortunate that more comprehensive accounts were not compiled seventy years ago, for Coppinger, Abbott, Gardiner and others were able to give tantalising references to island features then largely unaltered by man. Since that time the sandy islands have been almost entirely planted with coconuts, and the rocky islands generally devastated by surface guano mining. The effect of the latter on island ecology is well illustrated by Assumption, though the case of Remire suggests that at least partial recovery is possible over a period of a few decades, but endemic species once extinct cannot be brought back. It is possible that more information on the former state of these islands still exists in manuscript form or in Government archives: we have, for example, been fortunate to have had the loan of diaries and papers belonging to Mr H. A'C. Bergne and Sir John Fryer, dating from 1900-1910, which contain important information on the islands they visited. There is no doubt that modern work can now in many cases only record the state of island ecologies intensely disturbed and modified by man, and with the exception of marine life it is now difficult to attempt to reconstruct the state of island ecosystems before human exploitation began.

The islands treated in this report fall into two main groups: (a) elevated reef-limestone islands, including Cosmoledo, Astove and Assumption, which share many of the characteristics of Aldabra; and (b) sand cays on sea-level reefs, including Farquhar, Desroches, Remire and African Banks. They also experience considerable variation in rainfall, though records have not been kept on any of them except Assumption and Tromelin. Interpolation from known island records (Stoddart 1969b) suggests that Cosmoledo, Astove and Assumption have 1000 mm or less per annum, Farquhar about 1200 mm, and Desroches, Remire and African Banks, in the northern Amirantes, about 1500 mm.

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